



SEQUENCE LISTING

<110> Boehringer Ingelheim International GmbH

<120> Method for Identifying Compounds Modulating Sister Chromatid Separation

<130> 0652.2290001

<140> US 10/051,311

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<160> 13

<170> PatentIn Ver. 2.1

<210> 1

<211> 6668

<212> DNA

<213> Homo sapiens

<220>

<221> 5'UTR

<222> (1) .. (144)

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<221> CDS

<222> (145) .. (6507)

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Leu Glu Gly Arg Gly Leu Pro Cys Thr Pro Lys Pro Pro Asp Arg Ile	
	1340 1345 1350
agg caa gct ggc cct cat gtc ccc ttc acg gtg ttt gag gaa gtc tgc	4251
Arg Gln Ala Gly Pro His Val Pro Phe Thr Val Phe Glu Glu Val Cys	
	1355 1360 1365
cct aca gag agc aag cct gaa gta ccc cag gcc ccc agg gta caa cag	4299
Pro Thr Glu Ser Lys Pro Glu Val Pro Gln Ala Pro Arg Val Gln Gln	
	1370 1375 1380 1385
aga gtc cag acg cgc ctc aag gtg aac ttc agt gat gac agt gac ttg	4347
Arg Val Gln Thr Arg Leu Lys Val Asn Phe Ser Asp Asp Ser Asp Leu	
	1390 1395 1400
gaa gac cct gtc tca gct gag gcc tgg ctg gca gag gag cct aag aga	4395
Glu Asp Pro Val Ser Ala Glu Ala Trp Leu Ala Glu Glu Pro Lys Arg	
	1405 1410 1415
cgg ggc act gct tcc cgg ggc cgg ggg cga gca agg aag ggc ctg agc	4443
Arg Gly Thr Ala Ser Arg Gly Arg Gly Arg Ala Arg Lys Gly Leu Ser	
	1420 1425 1430
cta aag acg gat gcc gtg gtt gcc cca ggt agt gcc cct ggg aac cct	4491
Leu Lys Thr Asp Ala Val Val Ala Pro Gly Ser Ala Pro Gly Asn Pro	
	1435 1440 1445
ggc ctg aat ggc agg agc cgg agg gcc aag aag gtg gca tca aga cat	4539
Gly Leu Asn Gly Arg Ser Arg Arg Ala Lys Lys Val Ala Ser Arg His	
	1450 1455 1460 1465
tgt gag gag cgg cgt ccc cag agg gcc agt gac cag gcc agg cct ggc	4587
Cys Glu Glu Arg Arg Pro Gln Arg Ala Ser Asp Gln Ala Arg Pro Gly	
	1470 1475 1480
cct gag atc atg agg acc atc cct gag gaa gaa ctg act gac aac tgg	4635
Pro Glu Ile Met Arg Thr Ile Pro Glu Glu Glu Leu Thr Asp Asn Trp	
	1485 1490 1495
aga aaa atg agc ttt gag atc ctc agg ggc tct gac ggg gaa gac tca	4683

Arg Lys Met Ser Phe Glu Ile Leu Arg Gly Ser Asp Gly Glu Asp Ser	
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gcc tca ggt ggg aag act cca gct ccg ggc cct gag gca gct tct gga	4731
Ala Ser Gly Gly Lys Thr Pro Ala Pro Gly Pro Glu Ala Ala Ser Gly	
1515	1520 1525
gaa tgg gag ctg ctg agg ctg gat tcc agc aag aag aag ctg ccc agc	4779
Glu Trp Glu Leu Leu Arg Leu Asp Ser Ser Lys Lys Lys Leu Pro Ser	
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cca tgc cca gac aag gag agt gac aag gac ctt ggt cct cgg ctc cag	4827
Pro Cys Pro Asp Lys Glu Ser Asp Lys Asp Leu Gly Pro Arg Leu Gln	
	1550 1555 1560
ctc ccc tca gcc ccc gta gcc act ggt ctt tct acc ctg gac tcc atc	4875
Leu Pro Ser Ala Pro Val Ala Thr Gly Leu Ser Thr Leu Asp Ser Ile	
	1565 1570 1575
tgt gac tcc ctg agt gtt gct ttc cgg ggc att agt cac tgt cct cct	4923
Cys Asp Ser Leu Ser Val Ala Phe Arg Gly Ile Ser His Cys Pro Pro	
	1580 1585 1590
agt ggg ctc tat gcc cac ctc tgc cgc ttc ctg gcc ttg tgc ctg ggc	4971
Ser Gly Leu Tyr Ala His Leu Cys Arg Phe Leu Ala Leu Cys Leu Gly	
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cac cgg gat cct tat gcc act gct ttc ctt gtc acc gag tct gtc tcc	5019
His Arg Asp Pro Tyr Ala Thr Ala Phe Leu Val Thr Glu Ser Val Ser	
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atc acc tgt cgc cac cag ctg ctc acc cac ctc cac aga cag ctc agc	5067
Ile Thr Cys Arg His Gln Leu Leu Thr His Leu His Arg Gln Leu Ser	
	1630 1635 1640
aag gcc cag aag cac cga gga tca ctt gaa ata gca gac cag ctg cag	5115
Lys Ala Gln Lys His Arg Gly Ser Leu Glu Ile Ala Asp Gln Leu Gln	
	1645 1650 1655
ggg ctg agc ctt cag gag atg cct gga gat gtc ccc ctg gcc cgc atc	5163
Gly Leu Ser Leu Gln Glu Met Pro Gly Asp Val Pro Leu Ala Arg Ile	
	1660 1665 1670
cag cgc ctc ttt tcc ttc agg gct ttg gaa tct ggc cac ttc ccc cag	5211
Gln Arg Leu Phe Ser Phe Arg Ala Leu Glu Ser Gly His Phe Pro Gln	
	1675 1680 1685
cct gaa aag gag agt ttc cag gag cgc ctg gct ctg atc ccc agt ggg	5259
Pro Glu Lys Glu Ser Phe Gln Glu Arg Leu Ala Leu Ile Pro Ser Gly	
	1690 1695 1700 1705
gtg act gtg tgt gtg ttg gcc ctg gcc acc ctc cag ccc gga acc gtg	5307
Val Thr Val Cys Val Leu Ala Leu Ala Thr Leu Gln Pro Gly Thr Val	
	1710 1715 1720
ggc aac acc ctc ctg ctg acc cgg ctg gaa aag gac agt ccc cca gtc	5355
Gly Asn Thr Leu Leu Thr Arg Leu Glu Lys Asp Ser Pro Pro Val	
	1725 1730 1735
agt gtg cag att ccc act ggc cag aac aag ctt cat ctg cgt tca gtc	5403

Ser Val Gln Ile Pro Thr Gly Gln Asn Lys Leu His Leu Arg Ser Val	
1740 1745 1750	
ctg aat gag ttt gat gcc atc cag aag gca cag aaa gag aac agc agc	5451
Leu Asn Glu Phe Asp Ala Ile Gln Lys Ala Gln Lys Glu Asn Ser Ser	
1755 1760 1765	
tgt act gac aag cga gaa tgg tgg aca ggg cgg ctg gca ctg gac cac	5499
Cys Thr Asp Lys Arg Glu Trp Trp Thr Gly Arg Leu Ala Leu Asp His	
1770 1775 1780 1785	
agg atg gag gtt ctc atc gct tcc cta gag aag tct gtg ctg ggc tgc	5547
Arg Met Glu Val Leu Ile Ala Ser Leu Glu Lys Ser Val Leu Gly Cys	
1790 1795 1800	
tgg aag ggg ctg ctg ctg ccg tcc agt gag gag ccc ggc cct gcc cag	5595
Trp Lys Gly Leu Leu Leu Pro Ser Ser Glu Glu Pro Gly Pro Ala Gln	
1805 1810 1815	
gag gcc tcc cgc cta cag gag ctg cta cag gac tgt ggc tgg aaa tat	5643
Glu Ala Ser Arg Leu Gln Glu Leu Gln Asp Cys Gly Trp Lys Tyr	
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cct gac cgc act ctg ctg aaa atc atg ctc agt ggt gcc ggt gcc ctc	5691
Pro Asp Arg Thr Leu Leu Lys Ile Met Leu Ser Gly Ala Gly Ala Leu	
1835 1840 1845	
acc cct cag gac att cag gcc ctg gcc tac ggg ctg tgc cca acc cag	5739
Thr Pro Gln Asp Ile Gln Ala Leu Ala Tyr Gly Leu Cys Pro Thr Gln	
1850 1855 1860 1865	
cca gag cga gcc cag gag ctc ctg aat gag gca gta gga cgt cta cag	5787
Pro Glu Arg Ala Gln Glu Leu Leu Asn Glu Ala Val Gly Arg Leu Gln	
1870 1875 1880	
ggc ctg aca gta cca agc aat agc cac ctt gtc ttg gtc cta gac aag	5835
Gly Leu Thr Val Pro Ser Asn Ser His Leu Val Leu Val Leu Asp Lys	
1885 1890 1895	
gac ttg cag aag ctg ccg tgg gaa agc atg ccc agc ctc caa gca ctg	5883
Asp Leu Gln Lys Leu Pro Trp Glu Ser Met Pro Ser Leu Gln Ala Leu	
1900 1905 1910	
cct gtc acc cgg ctg ccc tcc ttc cgc ttc cta ctc agc tac tcc atc	5931
Pro Val Thr Arg Leu Pro Ser Phe Arg Phe Leu Leu Ser Tyr Ser Ile	
1915 1920 1925	
atc aaa gag tat ggg gcc tcg cca gtg ctg agt caa ggg gtg gat cca	5979
Ile Lys Glu Tyr Gly Ala Ser Pro Val Leu Ser Gln Gly Val Asp Pro	
1930 1935 1940 1945	
cga agt acc ttc tat gtc ctg aac cct cac aat aac ctg tca agc aca	6027
Arg Ser Thr Phe Tyr Val Leu Asn Pro His Asn Asn Leu Ser Ser Thr	
1950 1955 1960	
gag gag caa ttt cga gcc aat ttc agc agt gaa gct ggc tgg aga gga	6075
Glu Glu Gln Phe Arg Ala Asn Phe Ser Ser Glu Ala Gly Trp Arg Gly	
1965 1970 1975	
gtg gtt ggg gag gtg cca aga cct gaa cag gtg cag gaa gcc ctg aca	6123

Val Val Gly Glu Val Pro Arg Pro Glu Gln Val Gln Glu Ala Leu Thr	
1980	1985 1990
aag cat gat ttg tat atc tat gca ggg cat ggg gct ggt gcc cgc ttc	6171
Lys His Asp Leu Tyr Ile Tyr Ala Gly His Gly Ala Gly Ala Arg Phe	
1995	2000 2005
ctt gat ggg cag gct gtc ctg cgg ctg agc tgt cgg gca gtg gcc ctg	6219
Leu Asp Gly Gln Ala Val Leu Arg Leu Ser Cys Arg Ala Val Ala Leu	
2010	2015 2020 2025
ctg ttt ggc tgt agc agt gcg gcc ctg gct gtg cat gga aac ctg gag	6267
Leu Phe Gly Cys Ser Ser Ala Ala Leu Ala Val His Gly Asn Leu Glu	
	2030 2035 2040
ggg gct ggc atc gtg ctc aag tac atc atg gct ggt tgc ccc ttg ttt	6315
Gly Ala Gly Ile Val Leu Lys Tyr Ile Met Ala Gly Cys Pro Leu Phe	
	2045 2050 2055
ctg ggt aat ctc tgg gat gtg act gac cgc gac att gac cgc tac acg	6363
Leu Gly Asn Leu Trp Asp Val Thr Asp Arg Asp Ile Asp Arg Tyr Thr	
	2060 2065 2070
gaa gct ctg ctg caa ggc tgg ctt gga gca ggc cca ggg gcc ccc ctt	6411
Glu Ala Leu Leu Gln Gly Trp Leu Gly Ala Gly Pro Gly Ala Pro Leu	
	2075 2080 2085
ctc tac tat gta aac cag gcc cgc caa gct ccc cga ctc aag tat ctt	6459
Leu Tyr Tyr Val Asn Gln Ala Arg Gln Ala Pro Arg Leu Lys Tyr Leu	
	2090 2095 2100 2105
att ggg gct gca cct ata gcc tat ggc ttg cct gtc tct ctg cgg taa	6507
Ile Gly Ala Ala Pro Ile Ala Tyr Gly Leu Pro Val Ser Leu Arg	
	2110 2115 2120
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Pro Pro Ala Gly Phe Pro Ser Ser Arg Ser Asp Ala Glu Arg Arg Gln	
	35 40 45
Ala Cys Asp Ala Ile Leu Arg Ala Cys Asn Gln Gln Leu Thr Ala Lys	
	50 55 60

Leu Ala Cys Pro Arg His Leu Gly Ser Leu Leu Glu Leu Ala Glu Leu
65 70 75 80

Ala Cys Asp Gly Tyr Leu Val Ser Thr Pro Gln Arg Pro Pro Leu Tyr
85 90 95

Leu Glu Arg Ile Leu Phe Val Leu Leu Arg Asn Ala Ala Ala Gln Gly
100 105 110

Ser Pro Glu Val Thr Leu Arg Leu Ala Gln Pro Leu His Ala Cys Leu
115 120 125

Val Gln Cys Ser Arg Glu Ala Ala Pro Gln Asp Tyr Glu Ala Val Ala
130 135 140

Arg Gly Ser Phe Ser Leu Leu Trp Lys Gly Ala Glu Ala Leu Leu Glu
145 150 155 160

Arg Arg Ala Ala Phe Ala Ala Arg Leu Lys Ala Leu Ser Phe Leu Val
165 170 175

Leu Leu Glu Asp Glu Ser Thr Pro Cys Glu Val Pro His Phe Ala Ser
180 185 190

Pro Thr Ala Cys Arg Ala Val Ala Ala His Gln Leu Phe Asp Ala Ser
195 200 205

Gly His Gly Leu Asn Glu Ala Asp Ala Asp Phe Leu Asp Asp Leu Leu
210 215 220

Ser Arg His Val Ile Arg Ala Leu Val Gly Glu Arg Gly Ser Ser Ser
225 230 235 240

Gly Leu Leu Ser Pro Gln Arg Ala Leu Cys Leu Leu Glu Leu Thr Leu
245 250 255

Glu His Cys Arg Arg Phe Cys Trp Ser Arg His His Asp Lys Ala Ile
260 265 270

Ser Ala Val Glu Lys Ala His Ser Tyr Leu Arg Asn Thr Asn Leu Ala
275 280 285

Pro Ser Leu Gln Leu Cys Gln Leu Gly Val Lys Leu Leu Gln Val Gly
290 295 300

Glu Glu Gly Pro Gln Ala Val Ala Lys Leu Leu Ile Lys Ala Ser Ala
305 310 315 320

Val Leu Ser Lys Ser Met Glu Ala Pro Ser Pro Pro Leu Arg Ala Leu
325 330 335

Tyr Glu Ser Cys Gln Phe Phe Leu Ser Gly Leu Glu Arg Gly Thr Lys
340 345 350

Arg Arg Tyr Arg Leu Asp Ala Ile Leu Ser Leu Phe Ala Phe Leu Gly
355 360 365

Gly Tyr Cys Ser Leu Leu Gln Gln Leu Arg Asp Asp Gly Val Tyr Gly
370 375 380

Gly	Ser	Ser	Lys	Gln	Gln	Gln	Ser	Phe	Leu	Gln	Met	Tyr	Phe	Gln	Gly	385	390	395	400
Leu	His	Leu	Tyr	Thr	Val	Val	Val	Tyr	Asp	Phe	Ala	Gln	Gly	Cys	Gln	405	410		415
Ile	Val	Asp	Leu	Ala	Asp	Leu	Thr	Gln	Leu	Val	Asp	Ser	Cys	Lys	Ser	420	425		430
Thr	Val	Val	Trp	Met	Leu	Glu	Ala	Leu	Glu	Gly	Leu	Ser	Gly	Gln	Glu	435	440		445
Leu	Thr	Asp	His	Met	Gly	Met	Thr	Ala	Ser	Tyr	Thr	Ser	Asn	Leu	Ala	450	455		460
Tyr	Ser	Phe	Tyr	Ser	His	Lys	Leu	Tyr	Ala	Glu	Ala	Cys	Ala	Ile	Ser	465	470	475	480
Glu	Pro	Leu	Cys	Gln	His	Leu	Gly	Leu	Val	Lys	Pro	Gly	Thr	Tyr	Pro	485	490		495
Glu	Val	Pro	Pro	Glu	Lys	Leu	His	Arg	Cys	Phe	Arg	Leu	Gln	Val	Glu	500	505		510
Ser	Leu	Lys	Lys	Leu	Gly	Lys	Gln	Ala	Gln	Gly	Cys	Lys	Met	Val	Ile	515	520		525
Leu	Trp	Leu	Ala	Ala	Leu	Gln	Pro	Cys	Ser	Pro	Glu	His	Met	Ala	Glu	530	535		540
Pro	Val	Thr	Phe	Trp	Val	Arg	Val	Lys	Met	Asp	Ala	Ala	Arg	Ala	Gly	545	550	555	560
Asp	Lys	Glu	Leu	Gln	Leu	Lys	Thr	Leu	Arg	Asp	Ser	Leu	Ser	Gly	Trp	565	570		575
Asp	Pro	Glu	Thr	Leu	Ala	Leu	Leu	Leu	Arg	Glu	Glu	Leu	Gln	Ala	Tyr	580	585		590
Lys	Ala	Val	Arg	Ala	Asp	Thr	Gly	Gln	Glu	Arg	Phe	Asn	Ile	Ile	Cys	595	600		605
Asp	Leu	Leu	Glu	Leu	Ser	Pro	Glu	Glu	Thr	Pro	Ala	Gly	Ala	Trp	Ala	610	615		620
Arg	Ala	Thr	His	Leu	Val	Glu	Leu	Ala	Gln	Val	Leu	Cys	Tyr	His	Asp	625	630	635	640
Phe	Thr	Gln	Gln	Thr	Asn	Cys	Ser	Ala	Leu	Asp	Ala	Ile	Arg	Glu	Ala	645	650		655
Leu	Gln	Leu	Leu	Asp	Ser	Val	Arg	Pro	Glu	Ala	Gln	Ala	Arg	Asp	Gln	660	665		670
Leu	Leu	Asp	Asp	Lys	Ala	Gln	Ala	Leu	Leu	Trp	Leu	Tyr	Ile	Cys	Thr	675	680		685
Leu	Glu	Ala	Lys	Ile	Gln	Glu	Gly	Ile	Glu	Arg	Asp	Arg	Arg	Ala	Gln	690	695		700

Ala	Pro	Gly	Asn	Leu	Glu	Glu	Phe	Glu	Val	Asn	Asp	Leu	Asn	Tyr	Glu
705					710					715					720
Asp	Lys	Leu	Gln	Glu	Asp	Arg	Phe	Leu	Tyr	Ser	Asn	Ile	Ala	Phe	Asn
				725					730					735	
Leu	Ala	Ala	Asp	Ala	Ala	Gln	Ser	Lys	Cys	Leu	Asp	Gln	Ala	Leu	Ala
			740					745					750		
Leu	Trp	Lys	Glu	Leu	Leu	Thr	Lys	Gly	Gln	Ala	Pro	Ala	Val	Arg	Cys
		755					760					765			
Leu	Gln	Gln	Thr	Ala	Ala	Ser	Leu	Gln	Ile	Leu	Ala	Ala	Leu	Tyr	Gln
	770					775					780				
Leu	Val	Ala	Lys	Pro	Met	Gln	Ala	Leu	Glu	Val	Leu	Leu	Leu	Leu	Arg
785					790					795					800
Ile	Val	Ser	Glu	Arg	Leu	Lys	Asp	His	Ser	Lys	Ala	Ala	Gly	Ser	Ser
				805					810					815	
Cys	His	Ile	Thr	Gln	Leu	Leu	Leu	Thr	Leu	Gly	Cys	Pro	Ser	Tyr	Ala
			820					825					830		
Gln	Leu	His	Leu	Glu	Glu	Ala	Ala	Ser	Ser	Leu	Lys	His	Leu	Asp	Gln
		835					840					845			
Thr	Thr	Asp	Thr	Tyr	Leu	Leu	Leu	Ser	Leu	Thr	Cys	Asp	Leu	Leu	Arg
	850					855					860				
Ser	Gln	Leu	Tyr	Trp	Thr	His	Gln	Lys	Val	Thr	Lys	Gly	Val	Ser	Leu
865					870					875					880
Leu	Leu	Ser	Val	Leu	Arg	Asp	Pro	Ala	Leu	Gln	Lys	Ser	Ser	Lys	Ala
				885					890					895	
Trp	Tyr	Leu	Leu	Arg	Val	Gln	Val	Leu	Gln	Leu	Val	Ala	Ala	Tyr	Leu
		900						905					910		
Ser	Leu	Pro	Ser	Asn	Asn	Leu	Ser	His	Ser	Leu	Trp	Glu	Gln	Leu	Cys
		915					920					925			
Ala	Gln	Gly	Trp	Gln	Thr	Pro	Glu	Ile	Ala	Leu	Ile	Asp	Ser	His	Lys
	930					935					940				
Leu	Leu	Arg	Ser	Ile	Ile	Leu	Leu	Leu	Met	Gly	Ser	Asp	Ile	Leu	Ser
945					950					955					960
Thr	Gln	Lys	Ala	Ala	Val	Glu	Thr	Ser	Phe	Leu	Asp	Tyr	Gly	Glu	Asn
				965					970					975	
Leu	Val	Gln	Lys	Trp	Gln	Val	Leu	Ser	Glu	Val	Leu	Ser	Cys	Ser	Glu
			980					985					990		
Lys	Leu	Val	Cys	His	Leu	Gly	Arg	Leu	Gly	Ser	Val	Ser	Glu	Ala	Lys
		995					1000					1005			
Ala	Phe	Cys	Leu	Glu	Ala	Leu	Lys	Leu	Thr	Thr	Lys	Leu	Gln	Ile	Pro
	1010					1015					1020				

Arg Gln Cys Ala Leu Phe Leu Val Leu Lys Gly Glu Leu Glu Leu Ala
1025 1030 1035 1040

Arg Asn Asp Ile Asp Leu Cys Gln Ser Asp Leu Gln Gln Val Leu Phe
1045 1050 1055

Leu Leu Glu Ser Cys Thr Glu Phe Gly Gly Val Thr Gln His Leu Asp
1060 1065 1070

Ser Val Lys Lys Val His Leu Gln Lys Gly Lys Gln Gln Ala Gln Val
1075 1080 1085

Pro Cys Pro Pro Gln Leu Pro Glu Glu Glu Leu Phe Leu Arg Gly Pro
1090 1095 1100

Ala Leu Glu Leu Val Ala Thr Val Ala Lys Glu Pro Gly Pro Ile Ala
1105 1110 1115 1120

Pro Ser Thr Asn Ser Ser Pro Val Leu Lys Thr Lys Pro Gln Pro Ile
1125 1130 1135

Pro Asn Phe Leu Ser His Ser Pro Thr Cys Asp Cys Ser Leu Cys Ala
1140 1145 1150

Ser Pro Val Leu Thr Ala Val Cys Leu Arg Trp Val Leu Val Thr Ala
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Gly Val Arg Leu Ala Met Gly His Gln Ala Gln Gly Leu Asp Leu Leu
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Gln Val Val Leu Lys Gly Cys Pro Glu Ala Ala Glu Arg Leu Thr Gln
1185 1190 1195 1200

Ala Leu Gln Ala Ser Leu Asn His Lys Thr Pro Pro Ser Leu Val Pro
1205 1210 1215

Ser Leu Leu Asp Glu Ile Leu Ala Gln Ala Tyr Thr Leu Leu Ala Leu
1220 1225 1230

Glu Gly Leu Asn Gln Pro Ser Asn Glu Ser Leu Gln Lys Val Leu Gln
1235 1240 1245

Ser Gly Leu Lys Phe Val Ala Ala Arg Ile Pro His Leu Glu Pro Trp
1250 1255 1260

Arg Ala Ser Leu Leu Leu Ile Trp Ala Leu Thr Lys Leu Gly Gly Leu
1265 1270 1275 1280

Ser Cys Cys Thr Thr Gln Leu Phe Ala Ser Ser Trp Gly Trp Gln Pro
1285 1290 1295

Pro Leu Ile Lys Ser Val Pro Gly Ser Glu Pro Ser Lys Thr Gln Gly
1300 1305 1310

Gln Lys Arg Ser Gly Arg Gly Arg Gln Lys Leu Ala Ser Ala Pro Leu
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Ser Leu Asn Asn Thr Ser Gln Lys Gly Leu Glu Gly Arg Gly Leu Pro
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Cys Thr Pro Lys Pro Pro Asp Arg Ile Arg Gln Ala Gly Pro His Val
1345 1350 1355 1360

Pro Phe Thr Val Phe Glu Glu Val Cys Pro Thr Glu Ser Lys Pro Glu
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Val Pro Gln Ala Pro Arg Val Gln Gln Arg Val Gln Thr Arg Leu Lys
1380 1385 1390

Val Asn Phe Ser Asp Asp Ser Asp Leu Glu Asp Pro Val Ser Ala Glu
1395 1400 1405

Ala Trp Leu Ala Glu Glu Pro Lys Arg Arg Gly Thr Ala Ser Arg Gly
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Arg Gly Arg Ala Arg Lys Gly Leu Ser Leu Lys Thr Asp Ala Val Val
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Ala Pro Gly Ser Ala Pro Gly Asn Pro Gly Leu Asn Gly Arg Ser Arg
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Arg Ala Lys Lys Val Ala Ser Arg His Cys Glu Glu Arg Arg Pro Gln
1460 1465 1470

Arg Ala Ser Asp Gln Ala Arg Pro Gly Pro Glu Ile Met Arg Thr Ile
1475 1480 1485

Pro Glu Glu Glu Leu Thr Asp Asn Trp Arg Lys Met Ser Phe Glu Ile
1490 1495 1500

Leu Arg Gly Ser Asp Gly Glu Asp Ser Ala Ser Gly Gly Lys Thr Pro
1505 1510 1515 1520

Ala Pro Gly Pro Glu Ala Ala Ser Gly Glu Trp Glu Leu Leu Arg Leu
1525 1530 1535

Asp Ser Ser Lys Lys Lys Leu Pro Ser Pro Cys Pro Asp Lys Glu Ser
1540 1545 1550

Asp Lys Asp Leu Gly Pro Arg Leu Gln Leu Pro Ser Ala Pro Val Ala
1555 1560 1565

Thr Gly Leu Ser Thr Leu Asp Ser Ile Cys Asp Ser Leu Ser Val Ala
1570 1575 1580

Phe Arg Gly Ile Ser His Cys Pro Pro Ser Gly Leu Tyr Ala His Leu
1585 1590 1595 1600

Cys Arg Phe Leu Ala Leu Cys Leu Gly His Arg Asp Pro Tyr Ala Thr
1605 1610 1615

Ala Phe Leu Val Thr Glu Ser Val Ser Ile Thr Cys Arg His Gln Leu
1620 1625 1630

Leu Thr His Leu His Arg Gln Leu Ser Lys Ala Gln Lys His Arg Gly
1635 1640 1645

Ser Leu Glu Ile Ala Asp Gln Leu Gln Gly Leu Ser Leu Gln Glu Met
1650 1655 1660

Pro Gly Asp Val Pro Leu Ala Arg Ile Gln Arg Leu Phe Ser Phe Arg

1665	1670	1675	1680
Ala Leu Glu Ser Gly	His Phe Pro Gln Pro	Glu Lys Glu Ser Phe Gln	
1685	1690	1695	
Glu Arg Leu Ala Leu	Ile Pro Ser Gly Val	Thr Val Cys Val Leu Ala	
1700	1705	1710	
Leu Ala Thr Leu Gln	Pro Gly Thr Val Gly	Asn Thr Leu Leu Leu Thr	
1715	1720	1725	
Arg Leu Glu Lys Asp	Ser Pro Pro Val Ser	Val Gln Ile Pro Thr Gly	
1730	1735	1740	
Gln Asn Lys Leu His	Leu Arg Ser Val Leu	Asn Glu Phe Asp Ala Ile	
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Gln Lys Ala Gln Lys	Glu Asn Ser Ser Cys	Thr Asp Lys Arg Glu Trp	
1765	1770	1775	
Trp Thr Gly Arg Leu	Ala Leu Asp His Arg	Met Glu Val Leu Ile Ala	
1780	1785	1790	
Ser Leu Glu Lys Ser	Val Leu Gly Cys Trp	Lys Gly Leu Leu Leu Pro	
1795	1800	1805	
Ser Ser Glu Glu Pro	Gly Pro Ala Gln Glu	Ala Ser Arg Leu Gln Glu	
1810	1815	1820	
Leu Leu Gln Asp Cys	Gly Trp Lys Tyr Pro	Asp Arg Thr Leu Leu Lys	
1825	1830	1835	1840
Ile Met Leu Ser Gly	Ala Gly Ala Leu Thr	Pro Gln Asp Ile Gln Ala	
1845	1850	1855	
Leu Ala Tyr Gly Leu	Cys Pro Thr Gln Pro	Glu Arg Ala Gln Glu Leu	
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Leu Asn Glu Ala Val	Gly Arg Leu Gln Gly	Leu Thr Val Pro Ser Asn	
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Ser His Leu Val Leu	Val Leu Asp Lys Asp	Leu Gln Lys Leu Pro Trp	
1890	1895	1900	
Glu Ser Met Pro Ser	Leu Gln Ala Leu Pro	Val Thr Arg Leu Pro Ser	
1905	1910	1915	1920
Phe Arg Phe Leu Leu	Ser Tyr Ser Ile Ile	Lys Glu Tyr Gly Ala Ser	
1925	1930	1935	
Pro Val Leu Ser Gln	Gly Val Asp Pro Arg	Ser Thr Phe Tyr Val Leu	
1940	1945	1950	
Asn Pro His Asn Asn	Leu Ser Ser Thr Glu	Glu Gln Phe Arg Ala Asn	
1955	1960	1965	
Phe Ser Ser Glu Ala	Gly Trp Arg Gly Val	Val Gly Glu Val Pro Arg	
1970	1975	1980	
Pro Glu Gln Val Gln	Glu Ala Leu Thr Lys	His Asp Leu Tyr Ile Tyr	

1985	1990	1995	2000
Ala Gly His Gly	Ala Gly Ala Arg Phe Leu Asp Gly Gln Ala Val Leu		
2005	2010	2015	
Arg Leu Ser Cys Arg	Ala Val Ala Leu Leu Phe Gly Cys Ser Ser Ala		
2020	2025	2030	
Ala Leu Ala Val His Gly Asn Leu Glu Gly Ala Gly Ile Val Leu Lys			
2035	2040	2045	
Tyr Ile Met Ala Gly Cys Pro Leu Phe Leu Gly Asn Leu Trp Asp Val			
2050	2055	2060	
Thr Asp Arg Asp Ile Asp Arg Tyr Thr Glu Ala Leu Leu Gln Gly Trp			
2065	2070	2075	2080
Leu Gly Ala Gly Pro Gly Ala Pro Leu Leu Tyr Tyr Val Asn Gln Ala			
2085	2090	2095	
Arg Gln Ala Pro Arg Leu Lys Tyr Leu Ile Gly Ala Ala Pro Ile Ala			
2100	2105	2110	
Tyr Gly Leu Pro Val Ser Leu Arg			
2115	2120		

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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 3
 ggccaattga tatcatgagg agcttcaaaa gag 33

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<220>
 <223> Description of Artificial Sequence: primer

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Glu Trp Glu Leu Leu Arg
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Ser Phe Glu Ile Leu Arg Gly
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